

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

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| Applicant's or agent's file reference<br><b>IP/P7255/WOD</b> | <b>FOR FURTHER ACTION</b><br>see Form PCT/ISA/220<br>as well as, where applicable, item 5 below. |  |
| International application No.<br><b>PCT/GB2004/001122</b>    | International filing date (day/month/year)<br><b>17/03/2004</b>                                  | (Earliest) Priority Date (day/month/year)<br><b>22/03/2003</b> |
| Applicant<br><b>QINETIQ LIMITED</b>                          |  |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box II).

3. ☐ Unity of invention is lacking (see Box III).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**OPTICAL WAVELENGTH DIVISION MULTIPLEXER/ DEMULTIPLEXER DEVICE**

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1, 3

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☒ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2004/001122

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G02B6/293 G02B6/12 G02B6/32 G02B6/35

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.      |
|------------|---|----------------------------|
| X          | MIURA T ET AL: "MODELING AND FABRICATION OF HOLLOW OPTICAL WAVEGUIDE FOR PHOTONIC INTEGRATED CIRCUITS"<br>JAPANESE JOURNAL OF APPLIED PHYSICS,<br>PUBLICATION OFFICE JAPANESE JOURNAL OF APPLIED PHYSICS. TOKYO, JP,<br>vol. 41, no. 7B, PART 1,<br>July 2002 (2002-07), pages 4785-4789,<br>XP001163079<br>ISSN: 0021-4922<br>page 4785; table 1<br>page 4787<br>page 4789 | 1,5-15,<br>17-19,<br>22-29 |
| Y          | ---   | 2-4,30                     |
| Y          | GB 2 189 621 A (NIPPON SHEET GLASS CO LTD)<br>28 October 1987 (1987-10-28)<br>figures 2,4<br>---  | 2-4,30                     |
|            | ---<br>-/-  |                            |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

16 June 2004

Date of mailing of the international search report

05/07/2004

Name and mailing address of the ISA

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Authorized officer

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2004/001122

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| A          | TAKAHASHI H ET AL: "TRANSMISSION CHARACTERISTICS OF ARRAYED WAVEGUIDE N X N WAVELENGTH MULTIPLEXER" JOURNAL OF LIGHTWAVE TECHNOLOGY, IEEE. NEW YORK, US, vol. 13, no. 3, 1 March 1995 (1995-03-01), pages 447-455, XP000509310 ISSN: 0733-8724 page 447; figure 10 | 24-27                 |
| X          | JENKINS R M ET AL: "An Integrated Optic Approach to 10/sp1 mu/m LIDAR" CONFERENCE ON LASERS AND ELECTRO-OPTICS IN EUROPE, 14 September 1998 (1998-09-14), pages 389-389, XP010617541 Glasgow page 389  | 30                    |
| X          | EP 0 043 475 A (ZEISS CARL FA) 13 January 1982 (1982-01-13) page 1, line 19 -page 3, line 20; figures 1-4 page 4, line 28 - line 32  | 1,10-20, 22           |
| Y          | page 5, line 5 - line 27; figure 5   | 21                    |
| Y          | US 2002/191907 A1 (IDO TATEMI ET AL) 19 December 2002 (2002-12-19) paragraph '0009! paragraph '0020!   | 21                    |
| A          | US 5 428 698 A (JENKINS RICHARD M ET AL) 27 June 1995 (1995-06-27) column 13, line 52 -column 14, line 31; figures 9,10  | 21                    |
| X          | US 6 219 470 B1 (TU XIANG ZHENG) 17 April 2001 (2001-04-17) column 2, line 34 - line 40; figure 3 column 3, line 45 -column 4, line 3 column 6, line 34 - line 36  | 1-3,6-8, 10-19, 23-26 |
| Y          | column 4, line 35 - line 39; figure 5  | 5,9, 27-29            |
| Y          | US 2003/035613 A1 (HUBER AVIGDOR ET AL) 20 February 2003 (2003-02-20) paragraph '0011! paragraph '0010! paragraph '0019! paragraph '0029! - paragraph '0033! paragraph '0040!; figure 6 paragraph '0042! - paragraph '0046!  | 5,9, 27-29            |
|            | -/--   |                       |

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2004/001122

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| P,X        | <p>WO 03/065091 A (JENKINS RICHARD MICHAEL<br/>;MCNIE MARK EDWARD (GB); QINETIQ LTD (GB))<br/>7 August 2003 (2003-08-07)<br/>page 2, line 19 -page 3, line 30<br/>page 6, line 4 -page 7, line 28<br/>page 10, line 14 - line 18<br/>page 12, line 25 -page 13, line 2<br/>page 19, line 1 -page 20, line 24; figure<br/>3<br/>page 24, line 24 -page 25, line 29; figure<br/>7<br/>page 26, line 20 -page 27, line 23<br/>page 30, line 9 - line 20<br/>page 36, line 10 - line 11<br/>-----</p> | 1-24, 26,<br>30       |

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 31,32

Present claims 31-32, which rely on references to drawings of the present application, are not allowable under Rule 6.2.a PCT. It is not clear which elements of the drawings have to be considered as technical features. Such a lack of clarity renders a meaningful search of the claims 31-32 impossible. Consequently, the search has been carried out for those parts of the application which do appear to be clear, namely claims 1-30.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2004/001122

### Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 31, 32  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB2004/001122

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|----|---------------------|----------------------------|---------------------|
| GB 2189621                                | A  | 28-10-1987          | JP 8023613 B               | 06-03-1996          |
|   |    |                     | JP 62206502 A              | 11-09-1987          |
|   |    |                     | JP 63029709 A              | 08-02-1988          |
|   |    |                     | DE 3707290 A1              | 10-09-1987          |
|   |    |                     | FR 2595477 A1              | 11-09-1987          |
|   |    |                     | US 4790615 A               | 13-12-1988          |
| EP 0043475                                | A  | 13-01-1982          | DE 3024104 A1              | 21-01-1982          |
|   |    |                     | EP 0043475 A1              | 13-01-1982          |
|   |    |                     | JP 57030807 A              | 19-02-1982          |
| US 2002191907                             | A1 | 19-12-2002          | JP 2002006155 A            | 09-01-2002          |
|   |    |                     | US 2001053262 A1           | 20-12-2001          |
| US 5428698                                | A  | 27-06-1995          | CA 2096421 A1              | 21-06-1992          |
|   |    |                     | DE 69126887 D1             | 21-08-1997          |
|   |    |                     | DE 69126887 T2             | 08-01-1998          |
|   |    |                     | EP 0563065 A1              | 06-10-1993          |
|   |    |                     | WO 9211551 A1              | 09-07-1992          |
|   |    |                     | JP 6503898 T               | 28-04-1994          |
|   |    |                     | JP 3361520 B2              | 07-01-2003          |
|   |    |                     | JP 2003035918 A            | 07-02-2003          |
| US 6219470                                | B1 | 17-04-2001          | NONE                       |                     |
| US 2003035613                             | A1 | 20-02-2003          | NONE                       |                     |
| WO 03065091                               | A  | 07-08-2003          | WO 03065091 A2             | 07-08-2003          |